

Brown (J. B.) + Brown (Buck.)

REPORT OF CASES

TREATED AT THE

BOSTON ORTHOPEDIC INSTITUTION.

WITH REMARKS ON

SPINAL CURVATURE, STIFF JOINT, CLUB FOOT,
AND OTHER DISTORTIONS.

BY

JOHN B. BROWN, M. D.,

AND

BUCKMINSTER BROWN, M. D.

BOSTON ORTHOPEDIC INSTITUTION.

This Institution has been in successful operation about 12 years. The treatment of Club Feet, Crooked Limbs, Ankylosis, or Stiff Joints, Hip Disease, Wry Neck, Curvature and other affections of the Spine, and Spinal Nerve, with or without Paralysis, Strabismus, or Squint Eye, and other similar complaints, comprise the objects for which this Institution was founded.

A LARGE AND COMMODIOUS HOUSE in a Healthy location, near the MASSACHUSETTS GENERAL HOSPITAL, has been appropriated to this purpose. It contains a Hall for Orthopedic Exercises, and private apartments for Lodging and Board. It is under the surveillance of an experienced woman, who has charge of the House, and furnishes Board to the patients, either at the General Table, or in their private rooms, as may be necessary.

The Treatment is in conformity with the most modern improvements in Europe; the junior Surgeon of this Institution having recently visited all the Orthopedic Institutions of distinction in England, France, and Germany, for the purpose not only of gathering statistical facts of the state of Orthopedy in the Old World, but also to form an acquaintance with the FIRST SURGEONS, and their modes of practice, and of establishing a correspondence with them; — which now gives to the Boston Institution the very important advantage of receiving the earliest information of all improvements there made in this BRANCH OF SURGERY.

JOHN B. BROWN, M. D. }
BUCKMINSTER BROWN, M. D. } SURGEONS.

Gentlemen associated as Consulting Surgeons: — John C. Warren, M. D., Emeritus Professor of Anatomy in Harvard University; George Hayward, M. D., late Professor of the Principles of Surgery and Clinical Surgery in Harvard University; S. D. Townsend, M. D., and J. Mason Warren, M. D., Surgeons of the Massachusetts General Hospital, Boston.

REPORTS OF CASES

TREATED AT THE

BOSTON ORTHOPEDIC INSTITUTION,

OR

HOSPITAL FOR THE CURE OF DEFORMITIES OF THE HUMAN FRAME;

WITH SOME

PRELIMINARY OBSERVATIONS ON THE PRESENT
STATE OF THE INSTITUTION,

AND ON

CLUB FOOT, SPINAL CURVATURE, DISTORTIONS OF THE CHEST,
STIFF JOINT, AND SPINAL IRRITATION.

BY

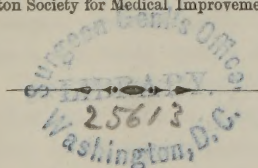
JOHN B. BROWN, M.D.

Fellow of the Mass. Medical Society; formerly Surgeon, and afterwards Consulting Surgeon,
at the Mass. General Hospital.

AND

BUCKMINSTER BROWN, M.D.

Fellow of the Mass. Medical Society, Member of the American Medical Association, and of the
Boston Society for Medical Improvement.



BOSTON:

CABINET OFFICE, 128, WASHINGTON STREET.

1850.

REPORTS OF CASES

OF THE

WESTERN ANTHROPOLOGICAL INSTITUTION

AND

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PRESENT STATE OF THE INSTITUTION, CLUB- FOOT, SPINAL CURVATURE, &c.

THE comparatively recent introduction of the practice of Orthopedy on a scientific basis, with the success which has attended its application in many cases hitherto abandoned by the surgeon as hopeless, renders it important that, from time to time, a certain number of these cases, and an account of the success which has been the result of their treatment, should be taken from the case-book and presented to the public. This should be done that others, both in and out of the profession, may be enabled justly to estimate this additional means of relief which a continued advancement in knowledge is affording to human suffering, and that there should be an universal acquaintance with this, among other instances, of the inestimable benefits which mankind has derived from the arcana of science and the labors of its followers.

Such a course is rendered the more necessary from the fact that the larger portion of the community, in consequence of the nature of their avocations, are necessarily in almost total ignorance upon this subject, and must remain so, unless some such method is pursued. This ignorance prevails to a certain extent, even among our professional brethren, those whose attention is almost entirely absorbed in the strictly medical branches, leaving to others the surgical, and who consequently have not had occasion or opportunity to become acquainted with Orthopedic practice, or to take note of the rapid advances it is now making to

wards maturity. It is owing to this want of attention on the part of physicians, that parents are continually receiving the assurance that their children will in time outgrow their deformity, and that as muscular strength increases, the trouble will decrease. Faith in such assurances as these, often induces a postponement of the treatment, until the cure becomes extremely difficult and tedious, or impossible. The comparative ease, certainty, and permanence, however, with which a cure can be effected in cases of this nature, particularly club-feet, stiff joints, &c., (species of deformity which are by far the most common,) is a fact which is now thoroughly established in the mind of every well-educated physician and surgeon.

It is to the rescue of cases which have been, until the last few years, looked upon as beyond hope, that Orthopedy steps in and affords its aid. And it is also by its assistance that the child, as yet unconscious of the extent of his misfortune, is, by his early restoration to symmetry, saved forever from a full realization of it. To describe numerous cases of this kind would be useless; it is necessary to mention particularly but two or three, the rest being, as it were, *fac similes*, varied slightly by circumstances of time and treatment. These will be followed by a few examples of those more formidable malformations, which even an experienced eye would be apt to regard as far too severe to be reached by human skill.

In connection with this report, however, it will, without doubt, be expected that some account should be given of the improvements that have been made, and the measures that have been taken, to render the Boston Orthopedic Institution as extensively applicable, and as extensively useful, as any other of a similar kind in the world. This Institution is the first and only one conducted on scientific principles in the United States. It has been in operation about twelve years, and was founded for the treatment of torticollis, or wry neck, spinal diseases, club feet, ankylosis, or stiff joint, diseased joints, and other analogous complaints. The treatment here pursued has for its ground-work those principles which have been gathered from practical and experimental researches, from the constantly increasing knowledge obtained in Europe and in this country, and which is derived not only from

individual experience, but also from post-mortem examinations of the state of the parts when diseased, of the condition in which they are left by previous disease, and when congenitally or accidentally distorted.

Thus enlightened European surgeons, the most distinguished for their science and skill, have given to the subject of Orthopedy their interested and anxious attention. Thanks to the unwearied exertions of such men as Stromeyer, and Dieffenbach, Guérin and Bouvier, Bonnet, Little, Blandin, Duval, Heine, and others, this branch of surgery has, to use the words of a distinguished writer, "progressed with a rapidity of which no other branch of surgery has ever offered an example."

The perseverance, energy, and accuracy with which the separate branches are pursued on the continent of Europe, the minute attention to detail with which, when once his attention is fixed, the Frenchman, or the German, follows up his subject, has become proverbial, and has given rise to that perfection in the various departments for which they are so justly celebrated. It is this, which, together with the superior opportunities afforded in other respects, for the study of disease, renders a term of study in the French and German schools of so much importance to those who would become proficient medical and surgical practitioners.

Since the publication of the last report from the Boston Orthopedic Institution, one of its surgeons, in addition to following the usual routine of foreign medical study, has visited the extensive orthopedic establishments of England, France, and Germany; has carefully examined the great variety of surgical instruments and apparatus there employed, and obtained descriptions, drawings, etc., of such as were thought most valuable, with a view to their introduction into our own country, that Americans might share the benefit to be derived from the researches of the learned and industrious on the other side of the water.

A few days passed with Professor Stromeyer, in Friburg, Germany, afforded an invaluable opportunity for obtaining information on this subject; and, apart from this object, his distinguished attainments in every branch of surgery, would alone render each hour spent in his society of immense importance to any one engaged in the same profession as himself. Diseases of the joints,

dislocations, fractures, ankylosis, constitutional irritation, each received its due attention in the friendly instructions that fell from his lips ; and each has, as is well known, received additional light from the science and talent which he has brought to bear upon it.

The immense establishment of Dr. Heine, near Cronstadt, Germany, also offered a most desirable means for improvement and study : and here, perhaps, a greater variety of surgical and mechanical apparatus is to be found than in any other place. One, in particular, adapted to congenital and spontaneous luxations of the hip joint, and also fractures of the neck of the femur, demanded especial attention. Of this and some others, drawings were obtained.

These, together with establishments of a similar kind in Germany, attendance upon the lectures and cases of M. Guérin, and at the bureau of administration at the hours when MM. Bouvier and Duval were receiving patients, and also attendance at the Royal Orthopedic Hospital in London, of which Mr. Lawrence is consulting surgeon, and where Dr. Little and others have brought orthopedic practice to so great a state of perfection, afforded rare opportunities for improvement in this branch of the surgeon's art.

A brief account of the circumstances which first drew Dr. Little's attention to this subject, and of the introduction of the operation of tenotomy into England, by this distinguished surgeon, will, perhaps, be read with interest.

The quotation is from his work on club-feet and analogous distortions.

"At an early period of my medical studies, I devoted much attention to the nature of these distortions, from the circumstance of my being afflicted with a club-foot ; and although I consulted the most approved surgical authorities, and many members of the profession in the metropolis, from none did I receive the slightest prospect of cure, and was compelled to be content with the assistance afforded by wearing mechanical instruments. Being particularly desirous of obtaining information respecting the anatomical condition of the limb, and finding the preparations in museums, as well as the published materials. extremely insufficient, my inquiries

were diligently directed to the attainment of further information on the anatomy of the subject. I obtained, however, only the most discouraging opinions; the affection having invariably been attributed to malformation and ankylosis of the individual bones of the tarsus, and the muscular contraction having been invariably regarded as secondary.

In the year 1832, I learned from Cruveilhier's "*Anatomie Pathologique*," that Delpach had proposed, and actually carried into effect, the division of the *Tendo Achillis*. In the year 1834 I was much gratified by learning, from the *Archives générales de Médecine*, that Dr. Stromeyer, of Hanover, had proposed some important modifications of the plan of Delpach, and had successfully operated in two cases. A perusal of the reports satisfied me of their resemblance to my own lameness, and led me to the resolution of proceeding to the continent. In 1835, and the spring of 1836, I visited Leyden, Leipsic, Dresden, and Berlin; and in these cities formed the acquaintance of several distinguished anatomists and surgeons, from most of whom, in answer to my inquiries respecting the operation of division of the *tendo Achillis*, I still experienced only disappointment. But Professors J. Muller and R. Froriep appeared to investigate the foot entirely with reference to its individual, anatomical, and morbid characters, discarding the notions of the necessary dependence of these distortions on the malformation of the bones, as well as the danger of wounding tendons. Prof. Muller, in reply to the question of the propriety of the operation as deduced from the anatomical condition, was of opinion that no improper conformation of the bones existed calculated to impede the replacement of the foot. Prof. Froriep considered that the method pursued by Dr. Stromeyer was based on sound surgical principles; that the report of his cases denoted the possession of great talents, and indefatigable perseverance; and that the performance of the operation was consequently advisable. Having thus been strengthened by the judgment of these eminent professors of the university of Berlin, I determined to place myself under the care of Dr. Stromeyer; and to his skill and kindness I am indebted for the restoration of my foot.

"Through the liberality of Dr. Stromeyer, I was afforded an

opportunity of practising this operation in Hanover, July, 1836. Subsequently at Berlin, in conjunction with Prof. Dieffenbach, who, on my return to that city, adopted this operation with the whole ardor of his genius, I treated upwards of thirty patients affected with various gradations of club-foot. The Stromeyerian method of cure had not been practised in this country until the performance of the operation by me in London, Feb. 20, 1837."

It may not be irrelevant to state in this place, that the method of treating club-feet and other deformities of the limbs by the subcutaneous division of tendons, was unknown in New England until introduced by the senior surgeon of the Boston Orthopedic Institution, in 1839. He was led to perform this operation by the accounts received direct from Germany and France of the success which had, in the hands of Prof. Stromeyer and others, attended this method of treatment. He published his first case in Oct., of that year. The operation was done on the 13th of the preceding February. This was the first case of the successful treatment of club-feet by tenotomy in these States, and, as far as he was then aware, it was the first in America.

Brief as is this sketch, it is highly important, as exhibiting the entire novelty of this or any method of treatment at the time when Dr. Little first directed the attention of the profession to the subject; and to those who are themselves, or whose connections are thus afflicted, it possesses peculiar interest, offering them the experience of a learned and scientific man, who has himself suffered in a like manner, and has in his own person received entire relief from that course of treatment which he now so earnestly urges upon others.

In connection with another case, the particulars of which Dr. L. relates in the body of his work, he thus speaks of the pain which an unrelieved continuance of the distortion inflicts upon the sufferer. "Persons who are unacquainted with the nature of club-foot and similar contractions, are unable to form any accurate idea of the pain and fatigue endured by those who are afflicted with only a trifling deformity of this species. There are cases, even in which there is scarcely any appearance of deformity, where the affection consists merely of an elevation of the heel, to the extent of an inch and a half, or where, in fact,

the contraction may be even more slight, and the individual may, nevertheless, experience much difficulty in walking. Indeed, it will often be found that the amount of pain and fatigue is greater in slight cases of Talipes, than in those where the deformity has reached its highest grade."

Confirmation of this remark is constantly presented to our notice. The extreme agony which is often produced by walking on the foot in its deformed state, treading on the side or top, is in almost every instance a subject of bitter complaint. This suffering extends frequently through life, and generally during this *entire period* there is each day more acute pain endured than is experienced during the comparatively short period which is occupied in producing a radical cure. It is more particularly severe during warm weather; callous excrescences are formed, which by pressure become inflamed, and excoriations, and finally ulcerations, appear, and the sufferer finds it impossible to touch his foot or feet to the ground without experiencing intense pain. A striking instance of this has lately been brought under our notice, at the Mass. Gen. Hospital, where a young and beautiful girl, seventeen years of age, was obliged to have her foot amputated, on account of a sore thus produced, and the suffering attendant upon it.

This young lady was born with a club-foot, viz., the left. As soon as she began to stand upon it, the skin became red, inflamed, and finally ulcerated. It would seem that the requisite attention in regard to rest and proper treatment had not been paid; for the ulcer extended, growing larger and deeper, until the metatarsal bones were attacked, the articulations became diseased, and the joint of the little toe was so completely destroyed that this member fell off, leaving a small cavity in its place.

Sixteen years had elapsed while this work of destruction was going on; that these had been sixteen years of suffering, we can well imagine. The amount of this suffering can be best realized by those who were present at the operation, and heard her expressions of delight when informed that the foot was off. The amputation was performed by Dr. J. M. Warren, while the patient was under the influence of ether, and not the least pain was experienced during the operation. In consequence of the constant endeavor to relieve the diseased foot while walking, and preserve

the proper balance of the body, the right foot had been turned in and distorted to the same extent as the other, so that she still has a club-foot of *the severest* species to contend with.

In order to a more correct comprehension of the process by which a cure is the happy result of treatment in cases of club-foot, the following general principles on the subject of the cutting of tendons, which were arrived at after numerous operations upon animals, by M. Bouvier, of Paris, will be read with interest. This surgeon, after repeated experiments, found that from the second to the third day after the section of the tendons, the cellular sheath which surrounded it had become thicker and more consistent than in the natural state, that it was open only on the side where the instrument had penetrated, and that it embraced the two extremities of the divided tendon. Its internal surface was ecchymosed, tinged with deep red, in contact with itself and with the tendinous extremities, which had the same color at their surface. In nine days he found the bond which it formed was nearly solid, and adherent to the ends of the tendon which had been divided; that it was now of a grayish color, and offered no appearance of fibre, and that the canal which it formed was contracted, with its walls in contact, often empty, but sometimes filled with partly coagulated blood. Towards the twelfth and thirteenth days the canal began to disappear, and by the eighteenth it formed a resisting band of the same size as the tendon, uniting its extremities, the canal having almost entirely disappeared, the tissue being close, slightly infiltrated by a serous fluid, and beginning to show traces of a fibrous structure. On the twenty-fourth day the intermediate substance was like its fibrous tissues, slimmer than the tendon itself, had great force of resistance, and adhered to it firmly; at this time it offered no trace of the inflammation which had produced it. On the thirty-fifth day the intermediate substance was perfectly continuous with the tendon, but could be distinguished from it, and towards the seventy-sixth day it presented the same appearance as upon an animal which had not been operated on, but more solid.

There are four general divisions of club-feet; viz. : pes varus, pes valgus, pes equinus, and pes calcaneus.

The first division, or pes varus, is where the foot turns in, and

the subject of it rests his weight upon the outer edge of the foot, and external ankle. The second division, or *pes valgus*, is where the foot turns outwards, and the subject of it rests his weight on the inside margin, the ankle being inclined in. This kind of club foot is seldom congenital, and is usually acquired by injury, or caused by paralysis of a part of the muscles which govern the foot, while their antagonists continue in full action.

The third division, or *pes equinus* (horse foot), is where the subject of it rests his weight on the ball of the foot, the heel being raised from the ground, and the instep thrown forward. This kind of club foot is seldom, if ever, congenital, and more frequently arises from injury than either of the other divisions.

The fourth division, or *calcaneous*, is where the subject of it rests his weight on his heels, or *ossa calcis*. This division is not so common as either of the preceding. Dr. W. J. Little, of London, had not seen, when he published his very excellent work on club feet, more than one case. He must have seen more since, for in our comparatively limited practice we have had at least eight cases under treatment.

Two of these divisions are not unfrequently united in the same foot; the second and third, for instance. In the second, or *valgus*, the heel is not usually drawn up, but it is sometimes. Where this is the case, the deformity is designated by a combination of the two generic terms, denoting the two varieties of club foot denominated *pes equinus* and *pes valgus*, i. e., *pes equino-valgus*; and so with the other divisions, as *pes calcaneo-varus*, &c.

In all these varieties of club foot, the extent of the deviation is indicated by figures, as 1st degree; 2d degree, &c.

In the treatment of club foot, every case does not require an operation, although in the majority this step is necessary. The after treatment by means of a properly constructed apparatus is, however, an important auxiliary, indispensable to the attainment of a favorable result.

The introduction of that pain-destroying agent, ether, has now rendered every operation, from the slightest to the most severe, so completely painless, that all fear on this account is taken

away. The more constantly we witness the influence of this vapor, when properly administered, the more beautiful and wonderful do its effects appear to us. In the case of stiff joints, its use is invaluable; and in the treatment of many other diseases of the joints and limbs, the relief and assistance which it affords cannot be too highly estimated. It has recently been used with perfect success to reduce old dislocations of diseased knee-joints, and it has been found to be eminently useful from its relaxing effect on the ligaments and muscles, even in those cases in which the disease was so far advanced as to seem to preclude the possibility of a complete restoration of the diseased member.

This important agent was made use of at the Institution soon after the discovery of its effects was made known, and is applied in all cases where the wishes of friends or the circumstances of the case require. As this discovery has been made since the last published report of the Institution, it may justly take rank among the advances which the treatment at this Institution has made since that time. We would simply add that accounts of every improvement which may be made in this branch of our profession in the old world, are, and will be, constantly received and introduced into the Boston Orthopedic Institution as they appear.

A few remarks on diseases of the spine, mostly of a character intended for the instruction of those whom a more elaborate and technical work would never reach, will here be given. It is unquestionably of high importance that the non-professional part of the community, particularly mothers, who have the physical and moral education of their daughters more especially under their care, should be in possession of some correct information respecting these complaints. There is so much quackery practised at the present day, in the treatment of spinal affections, that those who have the charge of growing females, should be acquainted with the causes of these complaints, the means of prevention, and, so far as practicable, the most rational modes of treatment.

The more correct information is disseminated upon this subject, the better it is for those who treat these deformities on scientific principles, and the less likely are the community to be duped by those whose subsistence depends on the amount of ignorance and credulity which their patients possess.

Spinal affections and distortions of the chest of every description appear to us to be increasing in frequency in this community, particularly among females in the opulent classes of society, a circumstance which may be attributed in part to the present mode of education, in which a greater attention is paid to the cultivation of the mind and female accomplishments, and consequently less time is spent in the cultivation of the physical powers and in those kinds of exercise which are necessary to invigorate the health and give tone to the muscular system in general, and especially to the muscles of the back, which are intended by nature to keep the spine erect, and maintain the symmetry of the chest.

The habit of sitting awry in writing and drawing, and the practice of standing on one foot, may be enumerated among the causes of curvature of the spine. That species of curvature called lateral curvature of the spine, where one shoulder "*grows out*," and there is a flattening of the chest on the opposite side, and one hip is higher than the other, is very frequently acquired at school, by sitting on seats which have no support for the back, and writing at desks which are too high, or not adapted to the height of the occupant. This species of curvature, we believe, very generally commences in the loins, but it does not usually attract attention (not even the mother's) until a second curve is formed in the dorsal region, and one shoulder begins to grow out, and the dress keeps sliding from off the other, and the dress-maker begins to call for padding so as to fill up the deficiency on one side, and make an apparent uniformity in the appearance of the back.

Sleeping upon feather beds with high pillows, has a tendency to produce lateral curvature of the spine. The more frequent use of the right than the left arm, has a tendency to draw the spine to one side, by increasing the strength of the muscles round the right shoulder, so that they overcome the antagonizing pow-

er of those muscles situated round the left shoulder. This is more particularly the case with seamstresses, and those who work much at embroidery and other mechanical business, where the right arm is kept much in use.

Stays and tight lacing of every kind, whether it be in the shape of tight waists to dresses, or under dresses, or any other form, have a tendency to produce curvature of the spine, and to increase them after they are produced. We would caution mothers particularly on this point. Nature made your daughters in better shape than you can model them by artificial means. All these restraints are unnatural, preposterous, and contrary to the dictates of reason; and when made use of we cannot wonder that there should be a deviation from the natural growth of parts. All anatomists agree that all unnatural restraints applied to the human body, whether in the shape of stays, tight dressing, or in any other way, have a tendency to check its growth, and produce deformity in the spinal column, by weakening the muscles and other parts by which it is sustained.

The practice of some modern empirics, of applying to the female body, for the purpose of correcting curvatures of the spine, solid brass stays, or iron frames made in the shape of stays and covered with a net-work of tape to conceal the material of which they are made, cannot be too much deprecated. Those who recommend such stays, probably do it from ignorance. For the purpose of showing the pernicious effects of such practice and of stays-wearing in general, we present two drawings. One represents the natural shape of the female chest. The other represents the same chest after stays have been worn for a length of time. It will be perceived that the natural conical shape of the chest is completely inverted. The lower part of the chest, which contains a portion of the lungs, and also the heart, ought to be, and is, in its natural state, the largest. The wearing of stays makes it the smallest (as may be seen by figure 2, on page 15;) consequently the heart and lungs have not sufficient room to act as nature intended they should. The chest is compressed, and the lungs cannot expand to receive a full inspiration—the blood is not sufficiently oxygenized, and the health decays for the want of the vivifying principle derived from the atmosphere. Palpita-

tions, short breath, and not unfrequently *disease* of the vital organs, follow this unnatural restraint upon their functions.

Fig. 1. Natural Chest.

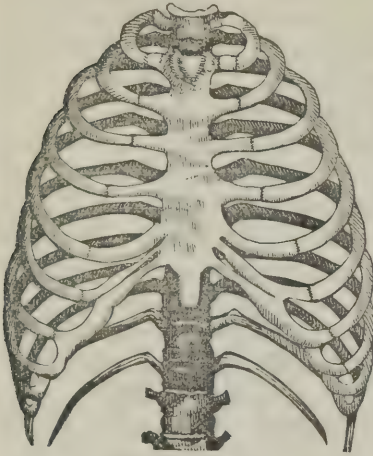
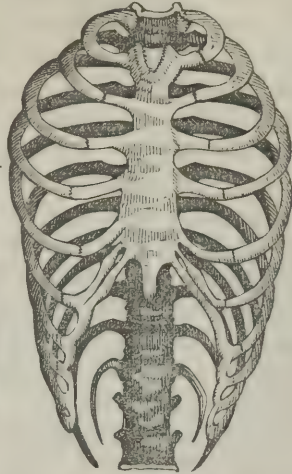


Fig. 2. Effects of Stays.



We make use of a great variety of apparatus in the form of beds or couches, levers, horizontal levers, and spinal supporters, for the use of these deformities.

These are adapted in every instance to the peculiarities of each individual case.

Dr. Guérin, of Paris, has invented a couch which he calls the sigmoid extension couch or plane. This fulfils many of the indications in lateral curvature, and is a most excellent instrument. In addition to this, we have Monsieur Bouvier's couch, and the couch for horizontal or parallel extension, invented by Dr. John Shaw, of London. The use of them is accompanied with no pain whatever. The young ladies lie and read on them with about the same ease they would on any other couch or sofa. We have attached exercises to them all, calculated to expand the chest, and strengthen the muscles of the back and chest, which they make use of while in a recumbent position. They then go into the exercising rooms, which are furnished with every variety of apparatus calculated to bring into action and strengthen the muscles of the back, so as to enable them to keep the spine erect. As a body apparatus, and to keep what we obtain by other means, we use

what we call spinal supporters. Of these we have a great variety. The one used at the Royal Orthopedic Institution, London, we have tried. The principles on which it is constructed is the true one, and its mechanism is ingenious. The objections to its general use, are its great weight, the difficulty of applying it, the impossibility of wearing it under the dress without producing great disfigurement, and its expense, which, previous to its importation, is \$75. We occasionally make use of it in obstinate cases. The principal on which it acts is much the same as the Patent Lever Belt, so called, invented by Dr. Taverniér, of Paris. We have this, also, and have given it a fair trial. One great objection to its use is, the difficulty of keeping it in place. It tilts, and the belt on one side rises up and gets into a very awkward and uncomfortable position. To remedy this, Guérin, of Paris, and some other French Orthopedists, apply a crutch under the depressed shoulder. We have tried it in this way, but have not found it convenient or effectual. Another important objection to it is, that the lever on the back, on which the whole power of the instrument depends, prevents the body from bending forward or back. This of itself, is sufficient to prevent its general adoption. The spinal supporters which we have made use of in most cases, for a year or two past, is an application of the correct principle upon which these two instruments are constructed to a modification of that used by Dr. J. Shaw, of London. It is light, elastic, and easy, and fits well under the dress. We have added two spring pads, one on each side, which are intended to apply to the convexity of the two curves like two hands, pressing in opposite directions, in such a manner as to be constantly operating to gently force the spine into a straight line, while the crutches which rest upon the hips, relieve it from the weight of the head and shoulders. Thereby a great impediment to its lengthening or becoming straight is removed ; for the head and superincumbent parts of the body rest on the spinal column, and are constantly operating to press it down, and in fact to increase the curves already formed. This is the instrument we mostly use in common cases of lateral curvature, but we apply them all occasionally, and vary, alter, modify and adapt them to different cases, as circumstances may require. No one appliance

is adapted to all cases, no more than any one medicine is adapted to the cure of all diseases.

Fig. 3.

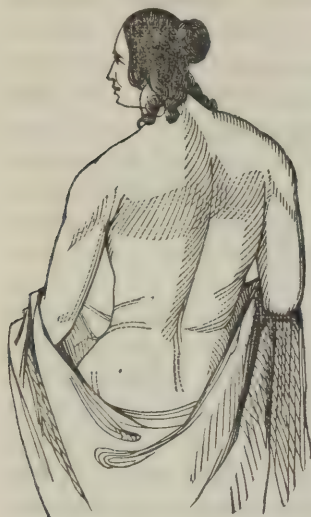


Fig. 4.



Fig. 3 lateral curvature of the spine before treatment.

Fig. 4 six months after treatment.

These spinal supporters, although important as auxiliaries, ought never to be depended upon as a cure for lateral curvatures of the spine, where one shoulder projects back, or "grows out," as is the common expression. Other means are necessary in most cases. Guérin's sigmoid extension couch, and other inclined planes, we have made use of, as stated above, and very much relied on in our process of treatment; but the confinement to a horizontal position so great a portion of the time is irksome, and we have sought out other means, which might be equally or more efficacious, without being open to the same objections. This, after devoting much time and thought to the subject, we have accomplished to our satisfaction, and to the increased comfort and convenience, as well as more rapid improvement of our patients, —more rapid than under any other kind of treatment we have ever witnessed. We denominate this apparatus the horizontal lever. It is thus noticed by a correspondent of the Boston Med. and Surg. Journal, under date of Jan'y. 16, 1850, who not only

mentions this apparatus, but briefly alludes to the other facilities and appliances of the Institution :

"I have recently visited the Orthopodic Institution in this city, and am happy to find it continues to increase in the number of its inmates and the extension of its means for the treatment of deformities. A new apparatus has been introduced for the treatment of lateral curvatures of the spine, which, after a satisfactory trial, has proved to be more effectual in correcting this common species of deformity among females, than even Guérin's celebrated sigmoid extension couch, which has heretofore been used at this institution, and at the same time its application is much more agreeable.

"Patients are not confined to a horizontal position, as they necessarily are in the use of the couch or inclined planes. They sit up, walk about, read, write or work, at their pleasure. I consider this decidedly an improvement in orthopedy. The operation of this new agent is physiological as well as philosophical. Old principles are applied in a new way. The muscles intended by nature for the support of the spinal column, are strengthened by its use, and made to act in such a manner, as to correct any deviations from a normal state that may exist in the relative position of the vertebræ.

"In the gymnasium attached to this institution, I also noticed some new apparatus for developing the chest and exercising and strengthening the muscles of the back. These exercises all have a meaning and tend to an object. One or the other is used, as the circumstances of the case may require, and according to the part which it is intended to affect.

"I understand that Dr. Riofrey, a distinguished French surgeon, who formerly practised orthopedy in Paris, on a recent visit to this institution, pronounced its mechanical appliances more complete and better adapted than any he had before seen. He was particularly pleased with the apparatus to which I have above referred, and said that he considered it the most efficient agent, for the cure of lateral curvatures, he had ever met with."

K. K.

Fig. 5.



Fig. 6.



Fig. 5 shows a lateral curvature of the spine before treatment.
 Fig. 6 nine months after treatment.

SPINAL IRRITATION

This complaint seems *also* to be increasing in frequency in this community, to whatever cause it may be attributed. By Spinal Irritation we mean a perverted state of the functions of the great spinal nerve. The power of all our voluntary motions is derived from this nerve. It may be considered the main spring of human action, and the more we reflect on its complicated functions the more formidable appears any derangement which may take place in its organization, that will produce a deviation from its natural and healthy action. There is not an organ in the human body whose disorders produce so much disturbance or more complicated symptoms. Diseases, apparently remote, have their origin, not unfrequently, in the spinal cord, or the nerves that proceed from it.—We are apt to make our applications to the part or organ which seems particularly affected, instead of to the spine, which is the actual seat of the difficulty. Formidable complaints, such as hemiplegia, paraplegia, &c., are immediately referred to the brain,

or spinal nerve, for their cause ; but we seldom look to the spine as the origin of minor local diseases.

Dyspepsia, palpitations of the heart, flatulence, affections of the bowels and all the abdominal viscera, and of the upper and lower extremities, upon close examination, may be found, to originate, not unfrequently, in some derangement of the spinal column.—The anomalous complaints of young females, and also of boys, may be traced very frequently to the spine ; either to some affection of the great spinal nerve, ganglia, or the nervous filaments that proceed from them.

There is no affection more common, as the consequence of spinal irritation, than a pain in the back of the head, confined principally to the scalp ; and still we are not apt to look for its origin in the spinal nerves. Even a slight curvature produces a derangement in the nervous influence. An inclination of the bony column to one side, although it may be so slight as hardly to be perceptible, has its influence on the great spinal nerve. The spinal column cannot be altered (we mean permanently), from an erect position, without danger of disturbing the functions of some remote organ or part, whose nerves are supplied therefrom.

We were called to a patient not long since, a lad about 15 years old, who had a variety of complaints, not readily accounted for. He had been attended by an eminent physician, a gentleman for whom we have the highest respect. His complaints were a painful affection of the eyes, palpitation of the heart, indigestion, a painful affection of the scalp, and a torpid state of the alimentary canal. We immediately examined the spine, and passed the finger up and down its whole length. We found two portions of it tender, viz. about the middle of the dorsal, and the middle of the lumbar vertebræ. When we pressed on the transverse process of the middle lumbar vertebra, he invariably complained of pain in the abdomen. These circumstances convinced us that all his complaints proceeded from spinal irritation, and we stated our conviction to the physician who had attended him. In the course of two or three weeks three of the lumbar vertebræ began to project.—They were evidently enlarged, probably from inflammation and swelling of the intervertebral substance. The attending physician was then convinced that all the complaints of this lad were caused

by a disease of the spinal column and the nerves that proceeded from it, affecting remote parts and organs.

I have generally found that this protean disease, spinal irritation, more readily yielded to remedies when some mechanical support was applied to the back in such a manner as not to impede the functions of the muscles, and still to act as an auxiliary to the spinal column in sustaining the weight of the head and shoulders.

The subjoined paragraphs are extracts from Drs. Tweedie and Teale upon the subject of Spinal Irritation.

“ This term has been used to designate an affection usually characterized by pain in the back, either induced or increased by pressure of the spinous processes of the vertebræ, accompanied by neuralgic and hysteric symptoms of a nature so variable as to simulate almost every form of disease to which the body is liable. Spinal irritation ought to be considered rather as an effect of disease, than as a malady *sui generis*, but as the subject is of the highest practical importance, it is proper to direct attention to it, by giving a detail of its phenomena in this place.

“ *Symptoms.*—When it is remembered that the spinal cord furnishes directly or indirectly nerves to every organ in the body, the numerous symptoms which may be produced by the increased, diminished, or perverted functions of one or more of these, may be readily imagined. Hence the phenomena this affection presents differ according to the extent, seat, and intensity of this irritation, and are so greatly diversified as to prevent the possibility of giving a description which would be applicable even to the majority of cases. The only means we can think of for conveying a general idea of this disorder, is by referring to the different forms of hysteria, neuralgia, and chronic rheumatism. A combination of the symptoms occasionally presented by all three, constitutes spinal irritation.

“ The only constant symptom is more or less pain on pressing the spinous processes of the vertebræ. It may be confined to one spot, or be more or less diffused over the spinal column, pointing out the extent of the spinal irritation. In many cases the patient is unconscious of anything wrong in the back, often denies the existence of pain in that situation, and refers all the uneasiness to

the ultimate distribution of the nerves arising from the part.— Sometimes there is a dull constant pain, which is overlooked, and thought to be wholly unconnected with the local complaint.— When pressure, however, is made on the affected part, the pain in the back is increased, and not unfrequently the patient starts as if an electric shock had been received, or falls into a state of syncope. The seat of pain generally corresponds with the origin of the nerves ramifying on the organs, or portion of the surface complained of, although in some instances, as stated by Griffin, the morbid changes in the cord appear somewhat more extensive than the external tenderness. The local pain is often produced or increased by lifting heavy weights, or twisting the body, and has often been excited by jerks or slight concussions when walking.

“In conjunction with the spinal tenderness there may be neuralgic pains, more or less diffuse, over different parts of the surface, diminished sensibility, convulsions or paralysis; and as the functions of the different viscera and organs of the body are often impaired, various diseases are simulated. * * * * At other times, instead of neuralgic pains, there is a sense of numbness in the hands or feet, extending more or less over the extremities. We have seen a case where the only symptom was excessive coldness in the hands or fingers, that often amounted to actual pain, and prevented the individual from sewing, and carrying on her usual employments. If the spinal irritation be more severe, the internal organs participate, and the symptoms produced vary according to the portion of the cord that is affected.

“When the spinal tenderness is confined to the cervical portion, there may be headache; loss of voice; neuralgic pains in the face and gums; trismus; various disorders of vision, as ocular spectra, *muscæ volitantes*, night blindness, &c.; more or less deafness or confused sounds in the ears; diminished or perverted sensation of taste or smell; dysphagia; paralysis of the tongue; sickness; vomiting; loss of appetite, inordinate hunger and thirst; pain at the stomach; pyrosis; difficult breathing, cough, irregularity of the pulse; palpitations; disposition to syncope; paralysis of one or both arms, sometimes confined to the fingers, hands, arms, or shoulders; increased sensibility or numbness in those situations; pricking, formication, &c. Although these symptoms may have coincided at different times with cervical

tenderness, it is evident that many of them, more particularly such as affect the special senses, arise from irritation of the cranial portion of the cord. When vertigo or delirium is present in such cases, it is probable that the brain itself is more or less affected. When the irritation is in the dorsal region, the palpitations of the heart and dyspnœa are more marked; there is sometimes dry cough; pleurodynia; pain under the clavicles, in the shoulders and superior extremities; sense of constriction in the thorax, often like a tight band; neuralgic pains in the side; diminished sensibility in the breast and epigastrium; more or less derangement in the digestive organs, &c. When it is situated in the lumbar portion, the symptoms are, pain in the parieties of the abdomen, hypogastrium, loins, and genito-urinary apparatus; symptoms resembling gravel in the kidneys, ureters, or bladder; irritable uterus; cramps and increased sensibility, or palsy more or less complete in the inferior extremities.

“When the spinal irritation is more diffused, there is an admixture or combination of the above symptoms. Hence the occasional difficulty experienced in tracing the various undefined symptoms to their true source. Cases of angina pectoris, asthma, different forms of neuralgia and hysteria, spasmodic croup, convulsions, hydrophobia, epilepsy, tetanus, chorea, paralysis, spasmodic colic, diarrhœa, cholera, irritable bladder, &c., are recorded by Griffin, all of which have been connected with the spinal irritation, and disappeared on its departure. It often happens that the spinal tenderness shifts its position, when the other symptoms change also.

“There are many individuals in whom the complaint has existed, in varying degrees of intensity, for a series of years, without its real nature having been suspected; the patients and their medical attendants having regarded it throughout as a rheumatic or a nervous affection.

“Many individuals, as young females and mothers of families whose domestic duties require the complete exertion of their energies, are often unjustly accused of indolence, when laboring under the state of muscular debility to which I have alluded. They have felt an unconquerable disinclination to exertion, and a desire for sedentary pursuits, without even themselves being aware of the cause of this inertness.”

CASES

TREATED AT THE

BOSTON ORTHOPEDIC INSTITUTION.

CASE OF WM. FERGUSON, JR.—CLUB FEET.

Oct. 12, 1841.—Wm. Ferguson, jr. æt. 6, was brought to the Institution by his Father, Wm. Ferguson, who himself has double varus of the third degree, *his* father had single varus, and *his* brother had double varus. Wm. F., jr., the lad now brought for treatment, has double varus of the third degree, making seven cases in the same family in the three generations. Wm. F., jr., walks on the upper side of the os cuboides, and the lower end of the fibula, that is, on the outer ankle, and a large callus or cushion is formed at this spot, on both feet, the consequence of walking with the feet in this unnatural position.

This lad remained under treatment about eight weeks, and owing to a want of pecuniary means, could not remain longer.—He was not entirely cured, and in 1842 was put under treatment again ; the result may be seen in the following cuts :

Fig. 7.

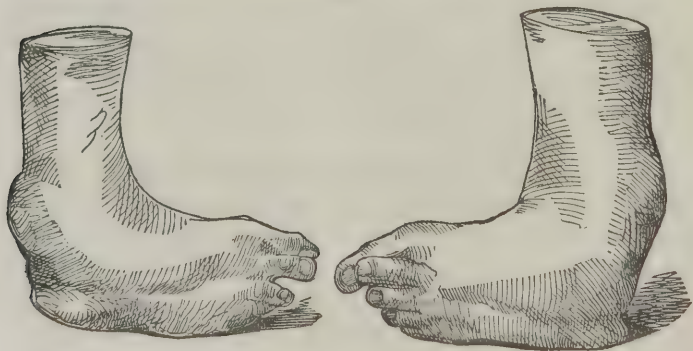


Fig. 7 before treatment.

Fig. 8.



Fig. 8, as in 1850, eight years after treatment.

It so happened, that second casts of these feet were not taken until May, 1850, being eight years from the time they were under treatment, which accounts for the difference in size of the casts, and shows very plainly that dividing tendons does not retard the growth of members.

CASE OF REV. CHAUNCEY EDDY'S SON.—PES EQUINUS VARUS.

The Rev. Chauncey Eddy's son came under treatment in 1841. About twenty months had elapsed from the time he came to the Institution to the date of Mr. Eddy's communication, as Mr. E., himself states; but we would add that the lad was at his home in Saratoga three-fourths of that time. The foot proved a very obstinate one to cure. There was no motion in the ankle joint, it was found very difficult to give it that free action which is necessary to walk well. This however, was effected, and the lad returned home with his foot quite as perfect as the other.

The following communication from the Rev. Chauncey Eddy, of Saratoga, New York, was published in the Boston Medical and Surgical Journal.

To the Editor of the Boston Medical and Surgical Journal.

SIR,—The notices which have appeared in your Journal, of successful operations performed by Dr. John B. Brown, for the

cure of club-feet, induced me to place a little son, afflicted with this infirmity, under his care. I did it after much hesitation and deep anxiety, lest the lad might be subjected to pain, and myself to expense, without a cure. Testimony from some responsible, disinterested person, such as I can now give, would have been exceedingly valuable to me, and I therefore suppose mine may be to others who are in the same state of doubt and anxiety in relation to what they ought to do for their afflicted children.

Dr. Brown does not need my assistance or recommendation.— Though under much obligation to him for his kindness to my son, in many ways expressed, and for the cure he has performed on very reasonable terms, I do not write this for his benefit, but for those who are deformed or have deformed children, and are ignorant or doubtful in relation to the fact that they can be easily and quickly cured.

The case of my child did not differ materially from other cases of club feet seen every day. The whole limb, from the hip downward, was turned inward so as to bring the knee-pan (excuse my omission of your anatomical nomenclature) and the toes of the foot in the direction of the other leg. By a retraction of some of the tendons, and two great laxness of others, the foot was turned over, the heel drawn up as far as it could be, so that it had not the appearance of a heel; all the bones in the instep were out of their proper position, and in the ankle there was none but a side-way motion. When he began to stand, the side or outer ankle was upon the floor, and the sole was nearly behind. From his birth I had his foot kept as much of the time as was possible in its normal position, and when he began to walk, I had him furnished with a boot that not only turned the sole upon the floor, but forced the whole limb around into its proper direction, with the knee-pan and toes a little out. By compelling him to walk in this way, and to sleep in the boot as much of the time as he could endure it—for it was quite painful—I hoped the cords kept thus continually extended, would become sufficiently lax to suffer the bones of the foot to remain in their places. But after six years of effort and expense on the part of his parents, and much suffering on his part, there was not the least improvement. As soon as the constraining apparatus was taken off, we had nothing but a deformed club-foot.

He was about six years of age when I brought him to Dr. Brown. Respecting the treatment of the case, I need to say nothing, except that the surgical operation occasioned no more pain than the prick of a pin or the opening of a vein with a lancet. After the heel-cord had been separated for a few weeks, it was necessary to part two others on the instep, and for a time others; but after the first operation, the lad had so little fear or dread of another, that he requested me to let him see it done, and while the operation was performing, he looked on as attentively as the operator, without wincing—not because he is insensible to pain, or has uncommon fortitude, but simply because the tendons having no sensibility the cutting of them did not hurt him. The cords being severed, the foot was placed in a boot very ingeniously constructed, so as to bring a slight pressure upon the protruding points, and at the same time turn the whole foot and limb towards their proper position by such slow degrees as to occasion no suffering. In a very few days the boy was walking, much better than he had ever done before, and for the first time without any pain; and since that time he has continued to improve slowly. The process of recovery must necessarily be slow. Now, after about twenty months, there is nothing in his gait nor in the appearance of his limb to indicate that he was ever deformed, except that it is much less in size than the other. But as it is rapidly developing, the disparity in this respect will soon disappear. For a thousand times the amount the cure has cost, I would not have had him grow up with the deformity, because I have seen in other instances the inconvenience and suffering which it occasions.

If this meets the eye of any person who is afflicted in the way my son was, or the eye of parents who have children thus deformed, my object will be accomplished if it induces them to go, without delay, fear or doubt, to Dr. Brown for a cure. It is cruelty, of which no parent ought to be guilty, to suffer a child to grow up with such a deformity, when a cure can be obtained at so cheap a rate as it can now be; and it is almost equal cruelty to effect a cure, as in some instances has been done, by machinery alone, extending the cords by force, and crowding the bones into their places against the action of the tendons. By relieving the contracted tendons, and then, with proper apparatus, gently and

slowly pressing the protuding parts into their places, and inclining the limb or member to its proper place and direction by degrees, a cure can be effected with less than an hundredth part the suffering that will result from either of the other courses.

I mention the name of Dr. Brown as the proper person to call upon, because I have seen the patients of four surgeons of three different cities, and none of them except Dr. B.'s had apparatus at all suited to the purpose. Some were suffering severe pain from theirs, some will derive no benefit from the operation, and I have seen but one that will probably be cured; and that because, being an infant, it has the hand of its nurse for a boot to keep it in its place. Any surgeon can separate the cords well enough; but the cure depends more upon the machinery that is afterwards used, than all things else. I have reason to presume that there is none in the country to be compared with that invented and used by Dr. Brown.

Yours, &c.

Saratoga Springs, N. Y.

CHAUNCEY EDDY.

Fig. 10.

Fig. 9.



In the above cut, fig. 9 represents the foot as it was when the lad was brought to the Institution for treatment; fig. 10 shows it as it now is.

G. A. L.'S CASE.—PES EQUINUS, THIRD DEGREE.

G. A. L., æt. 10, from North Bridgewater, entered Institution Sept. 18, 1847, with pes equinus of the third degree. We divi-

ded the tendo-Achillis and plantar fascia, and placed the foot in an apparatus suited to the case. Nov. 18, 1857 re-divided tendo-Achillis. The following cuts represent the foot as it came and as it went home :

Fig. 11.



Fig. 12.



Fig. 11 before treatment.

Fig. 12, eleven weeks after treatment.

CASE OF H. J. K.—DOUBLE VARUS, THIRD DEGREE.

April 14, 1849.—H. J. K., aged 8, came to Institution from Boxford, Mass., with double varus of the third degree. He walked on the outer ankle, and with much pain, particularly in warm weather, when the parts on which he trod would become inflamed and swollen. The following cuts represent the case:

Fig. 13

Fig. 14.

Right foot.



Fig. 13, thirteen weeks after treatment.

Fig. 14, before treatment.

Fig. 15.

Fig. 16

Left foot.



Fig. 15, thirteen weeks after treatment.

Fig. 16, before treatment.

CASE OF CHARLES W.—FALSE ANGULAR ANKYLOSIS OF THE KNEE,
WITH DISLOCATION OF THE TIBIA ON FEMUR.

Charles W., son of Mr. W., of New York, entered the Institution Sept. 18, 1848.

The right leg was drawn up, making an acute angle with the thigh. Between three and four years since, he had suffered from scrofulous disease of the joint. There was a partial dislocation of the tibia backwards, extreme tenderness still remained about the joint. A line drawn from the great trochanter to the external malleolus measured twelve inches only.

Sep. 20. The semi tendinosus and semi membranous and the biceps were divided. Drs. J. C. and J. M. Warren were present at the operation. An apparatus, fitted accurately to the limb, and capable of producing very gradual extension, was applied. During the progress of extension great care was taken that the lever power which such instruments are capable of exerting should not act in such a manner as to throw the head of the bone still further backwards. This accident has frequently occurred in the practice of surgeons when treating this deformity. The apparatus was therefore so arranged as to tend to reduce the partial dislocation, at the same time that the limb was straightened.

The leg improved rapidly, and at the expiration of one month from the time of the operation the space from the trochanter major to the external malleolus, had increased five inches, and the tenderness had greatly lessened. The leg continued to improve until Dec. 26, when the patient returned to New York to pass a couple of weeks with his friends. During this period, of course it was impossible that he should be watched with the same care as when under our own immediate observation, and on his return, we found that an almost complete dislocation had taken place. The head of the tibia was thrown back into the popliteal space, and there was very great prominence of the lower extremities of femur. The sensitiveness around the joint had also much increased. Leeches were applied to reduce the inflammation, then antimonial ointment, a solution of nitrate of silver, and the douche were resorted to. These applications produced great relief from pain, and

also removed to a considerable extent the sensitiveness of the joint.

After this preparatory treatment had been vigorously enforced, and its object attained, our aim of course was to restore the bones to their normal position. To effect this, we administered Chloric Ether, until the little patient was completely under its influence, and totally insensible. Extension and counter extension were then used, by means of pulleys to separate the extremities of the bones, and then, by applying Dr. Little's very ingenious and useful apparatus for affections of the knee, we were enabled on the first trial partially, and on the second, made a few weeks later, entirely to remove the dislocation, and at the same time the leg was almost completely straightened.

Fig. 17.



Fig 17, appearance of the leg before treatment.

Fig. 18.*

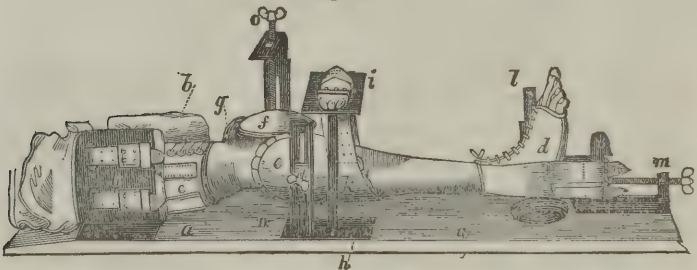


Fig. 18, appearance of the leg during treatment, with a representation of Dr. Little's apparatus.

* *Apparatus for remedying compound false ankylosis of knee.* *a a*, mahogany board; *b b*, movable padded metal pieces, and *c*, laced circular bandage, serving to encase and fix the

No inflammation or other ill effects resulted from this operation, on the other hand, the tenderness was less, and the patient was enabled to use the limb as soon as we considered it consistent with safety to do so. He now placed the whole foot fairly on the ground, and walked with but a light limp, which was the consequence of the limb being from one to two inches shorter than the other. This shortening, or more probably this "arrest of development," always takes place when a limb is from any cause kept for any length of time in a state of inactivity, and can only be remedied in a majority of instances by the boot being made with a sole of sufficient thickness to render both legs of equal length. Charles was now enabled to throw aside his crutches, without which, for a great length of time he had not been able to walk a step, and with the assistance of at first two canes, and afterwards with but one, to go about with comparative ease and freedom. There has never been any return of the dislocation, and with proper care, the leg will, no doubt, continue to improve, and be as useful, and, as the muscles become developed from exercise, as well proportioned as the other.

CASE OF MISS G.—CURVATURE OF THE SPINE.

Curvature of the Spine from irregularity of walking, congenital adduction of the thighs, contraction of the knees, inversion of the feet, and permanent flexion of all the toes.

A young woman æt 22, entered the Institution May, 1849, suffering from the deformities named above.

The adduction of the thighs was not made known to us at first, and we believe she had kept this a secret from her friends and

thigh and pelvis; *d*, laced stocking and straps, secured to the screw *m*, constituting the means by which the foot is drawn downwards, and the articular extremities of knee drawn asunder; *f*, concave pad, serving, through the agency of *o*, to press down the knee; *e*, movable pad, attached to a movable screw, adapted so as to press the fibula and tibia inwardly; *g*, similar pad, to press the internal condyle outwardly; *h*, one of a pair of uprights, on which rests transverse piece *i*, serving as a bridge, from which, by means of the strap *k*, the upper portion of the tibia is elevated; *l*, a spring, the action of which inverts the foot, and, combined with *m*, inverts the leg. The application of this instrument confines the patient to bed or couch.

former medical attendants. Her difficulties in walking were represented to us when she came to the Institution, as arising entirely from the unnatural position of her feet, and in fact she had been operated upon by a gentleman in the country, and both heels cords were divided for the cure of club feet.

On examining her feet one day, and for the purpose of obtaining a better view of them, she was asked to turn out her knees, but said she could not. On further enquiry it was found, that this inability to separate the thighs had always existed. As she stood erect, one knee lapped over the other, and she could not walk without inclining the body first to one side and then to the other, alternately, so as to enable her to pass one knee by, and place it anterior to the other at every step.

We divided the adductor longus femoris in both thighs, about three inches below the os pubis, and applied an apparatus between them, regulated by a screw, so that the thighs could be separated gradually at will. In this way a free and full motion and abduction was obtained. The free motion of the thighs enabled her to straighten the legs, which of itself had a tendency to turn out the feet, and by putting on our usual foot apparatus, and dividing the plantar fascia, these feet were brought into a normal position. There only remained a contracture or permanent shortening of the flexor tendons of the toes. These were all divided, and a foot board applied, perforated in such a manner that each toe could be separately lashed to it, and this difficulty was in five weeks, entirely remedied.

AUBURN STREET CASE.—CONGENITAL DISLOCATION OF THE KNEE.

Congenital Dislocation of the knee by contraction of rectus muscle.

July 1844.—Was called to a child in Auburn street, Boston, two months old. The left knee was dislocated in utero, by contraction of the rectus. The lower leg was turned up anteriorly upon the thigh bone or femur, to nearly a right angle. The attendant physician supposed from the examinations he had been able to make, that the patella or knee-pan was deficient. Upon minute investigation, however, it was found to be in its natural

situation, although small, and being pressed down between the condyles of the femur by the rigid contraction of the rectus, it was difficult to discover.

The limb was placed in an appropriate apparatus, and in a few weeks was reduced to a normal shape, so as to be equally perfect with the other, without division of the rectus muscle.

CASE OF CLUB-FOOT AND CURVATURE OF THE SPINE.

Miss K., ætat. 25, daughter of a distinguished clergyman, now deceased, placed herself under my care. She has varus congenitus of the left foot, of the third degree. The temperature of the limb is lower and the foot smaller than the other, The leg is also smaller, and an inch and a half shorter than its fellow. The tarsal bones are loose, and easily moved on each other. She is constitutionally slender and delicate, and has never enjoyed good health. The spine is badly curved, in consequence of her irregular manner of walking; and the sternum hollowed in, so as to impede the free action of the lungs and heart. She has frequent palpitations, and labors for breath, particularly on going up an ascent, or making a hurried effort of any kind.

Divided the tendo-Achillis, and the tibialis anticus, in the presence of Dr. J. Mason Warren, and applied my apparatus, as usual, on the same day.

Five months after the operation she walked well, and occasionally in the streets. The foot is nearly normal, and she begins to think about taking measures for correcting the curvatures in the spine.

On minute examination, I find she has four lateral curves.—The upper one extends quite up to the os occipitis. She inclines her head to the right, and is in the habit of resting it on the right fore-arm and hand; the elbow being supported on a table, chair, or any convenient article that may be near her. The greatest curvature is situated about the middle of the dorsal vertebræ, with its convexity towards the right side. The deviation here is two inches from the mesial line. The right shoulder is elevated.—

The right scapula projects, and there is very considerable excoriation of the ribs on this side. I asked her if she was willing I should cut her back. She unhesitatingly said yes. Dr. J. C. Warren, my friend and brother in law, was called in consultation. He advised to an operation.

Divided the *longissimus dorsi*, the *sacro-lumbalis*, and *trapezius*, in the presence of Dr. J. Mason Warren and Dr. J. V. C. Smith. There was very little blood lost in the two operations, and she bore them with that cheerfulness and equanimity which so strongly mark her character.

The foot is almost entirely restored. It is now fourteen weeks since the operation on the back. She has passed one week of the time in the country. With this exception, she has very steadily pursued a course of orthopedic means to bring the spine into a normal shape. The greatest deviation now is only one fourth of an inch from the mesial bone. She has gained over an inch in height, and her health is very much improved. Notwithstanding the various operations on her foot and back, and the various mechanical means she has made use of, she has been regularly gaining flesh and strength; and her health is in every respect much better than when she came to Boston. J. B. B.

CASE OF PES EQUINUS VARUS.

The following case is remarkable only on account of the age of the patient—being the oldest ever operated upon for the cure of club-foot, either in this country or in Europe. The case of a gentleman in Boston, *æt.* 55, which I reported in the *Boston Medical and Surgical Journal* about two years ago, was then, I believe, and still is, the oldest on record previous to the one I shall now concisely describe.

Mrs. S., of Boston, *æt.* 73, was attacked with hemiplegia, the left side being affected. She partially recovered the use of her arm and leg. Certain muscles, however, were permanently contracted, and remained so after a lapse of two years. These were the flexors of the fingers, the *gastrocnemii*, and the *tibialis anti-*

cus. The fingers were so much contracted (and still remain so) as to keep the hand nearly closed ; still she has the use of the arm. By the contraction of the gastrocnemii and the tibialis anticus, the heel was elevated and the foot turned in towards the other, forming that species of club-foot called *pes equinus varus*, of the second degree. When she attempted to walk, which she could only do by assistance, the weight of the body came upon the outer margin of the anterior portion of the metatarsal bone of the little toe. This became very sore. She had, besides, constant pain in the whole of the foot, which had existed for two years.— She consulted Dr. Gay, her physician, Dr. Z. B. Adams who had attended her during Dr. Gay's absence in Europe, and Dr. Bigelow. They stated to her that they thought favorably of an operation, and advised her to consult me, which she did. My only doubts were whether, at her advanced age, and in her feeble state of health, the tendons would unite, if divided. I, however, made up my mind that dividing the tendons would relieve the pain, from which she had been a constant sufferer for two years ; and again, that if the tendons never united, I would put on an apparatus which would enable her to walk much better than she did. Accordingly, I divided the tendo-Achillis and the tibialis anticus, in presence of Drs. Gay and Buckminster Brown. I applied my usual apparatus. In a few days the pain in the foot was relieved, and in the course of a fortnight entirely left her. The tendons are united, and she walks with ease. Her health has improved, and she has gained flesh, as is remarked by all her acquaintance.

It will be perceived, in this drawing that the leg makes an acute angle with the foot. This is done to show that the ankle-joint has its free and natural motion. It is a mistaken notion that a foot is cured, when brought in a parallel line with the leg, laterally, even if it can be flexed to a right angle with it. It may appear very well as the patient stands, but very awkward when he walks. We all make an acute angle between the foot and leg every step we take, and particularly in going up an ascent. A person would make awkward work in going up Mt. Washington with feet which could only be flexed to a right angle with the leg. The fact is, a person who can merely flex his feet, so as to bring

Fig. 20.

Fig. 19.



them at a right angle with the leg, must turn them in, or out, every step he takes, in order to give the propelling power forward; and it is most natural to turn them in. Hence it is that feet which have been cured in this way (and many such have been reported), will, after being walked upon a short time, revert to their pristine obliquity, or nearly so. The importance of the free use of the ankle-joint, and the necessity that the foot should be capable of performing an acute angle with the leg, have not been noticed by writers on the cure of club-foot with sufficient emphasis: and in fact, I do not recollect any author who has mentioned it at all.

Fig. 19 represents the foot as it was eight weeks ago.

Fig. 20 represents it as it now is.

J. B. B.

CASES OF PES EQUINUS VARUS ACQUISITUS AND CONTRACTURE OF THE KNEE JOINT.

John Kilby, Esq., of Dennysville, Maine, placed his son, a lad about 13 years old, at the Institution. The following account of the case and treatment is copied from the Case Book. This lad has not walked without a crutch for many years. The left knee is contracted to an angle of 30 degrees, beyond which it cannot be extended. The foot on the same side is more deformed than any we have met with. If it was separated from the leg, and the

toes removed, no one would suspect what it was, or for what purpose it was made. When the anterior part of the foot is placed upon the ground, the heel is elevated four inches. The anterior part of the foot is twisted inwards, in a very unusual manner. The astralagus is very prominent, being subluxated upward and outward. There is no motion in the ankle-joint. The anterior extremity of the metatarsal bone of the little toe projects outward to a very unusual degree. All the metatarsal bones oblique inwards. The sole of the foot looks upwards, the foot being turned nearly upside down. The toes are turned back, so as to be nearly in contact with what ought to be the top of the foot. The little toe presses back against the metatarsal bone of the toe next

Fig. 21.

Fig. 22.



it, marking the point on which the body rests, when the foot was placed on the floor.

Divided the tendo Achillis, plantar fascia, and the long flexors in the sole of the foot. There was not a drop of blood.

It would be tedious, and is unnecessary, to go through with a long, detailed, daily record of the treatment of this case. Suffice it to say, the tendo Achillis was divided five times; the long flexors in the sole of the foot, three times; the abductor pollicis pedis, twice; the plantar fascia, the biceps flexor cruris, the semi-tendinosus, and the semimembranosus, each once.

The apparatus for leg and foot, used at this Institution, were applied to this case. It was not till after the fourth division of the tendo Achillis, that we were able to reduce the subluxated astragalus. We could then with the thumb press it into its place, and even make an *indentation* where the greatest prominence had existed; but this bone had been so pinched and wedged in, that it was not sufficiently developed to fill the space nature designed for it. It was difficult to retain it in place. By perseverance however, the foot and leg were brought to the state of perfection represented in fig. 22.

Fig. 21 represents the foot and leg as they were when the lad came to the Institution.

Fig. 22 represents them as they were when he left.

CASES OF TORTICOLIS, OR WRY NECK.

Miss H. S., ætat. 7. The right sterno-cleido-mastoideus muscle strongly contracted. The face is turned over the left shoulder, and the back of the head over the right, and almost in contact with it. She has the visage of a wry-neck patient, but not so much so as in cases where the deformity is congenital. The angle of the mouth is depressed and drawn down. The left eyebrow is elevated above the right. The right side of the head is so strongly inclined to the right shoulder as to give an obliquity to all the features of the face. This deformity was the sequel of scarlatina maligna; and so far as our experience extends, non-

congenital deformities and contractions of muscles are more frequently the result of this disease than of any other.

She has combined with the torticollis a lateral curvature of the spine. The greatest deviation being between the shouldér-blades, the convexity being towards the right, but there is an acute angular convexity of the cervical vertebræ towards the left, produced by the strong and permanent contaction of the sterno-cleido-mastoideus muscle, which draws the back of the head over and nearly on to the right shoulder.

March 6th, 1840. After a consultation with Dr. J. C. Warren, the sternal branch of the sterno-cleido-mastoideus was divided, in presence of Drs. Thompson of Charlestown, Pratt of the House of Representatives of Mass., J. M. Warren, and E. W. Leach. Applied the paste-board stock after the manner of Dieffenbach, which was used for some weeks, but to very little effect. This day, April 18th, applied an apparatus which we contrived for the purpose. It consisted of a brass belt resting on the hips, with crutches coming up under the arms, the anterior extremity of which, on the left side, extended to about the height of the top of the head—and the posterior extremity on the right side extended to about the level of the ear. The tops of these were connected by a steel wire in the form of an arch, which went over the head for the purpose of giving them support. Each of these uprights had a spring attached at the top, and running at right angles, an inch wide, and six inches long; the one on the left side running posteriorly, and that on the right anteriorly. A cap was made for the head, of brown cambric, so as to fit, and a strap attached on the right side and brought down posteriorly and buttoned to the top spring on the left side. Another strap of the same material was attached to the cap on the left side, brought round the chin, and buttoned to the right top spring. These straps acting together, had the effect of elevating the head, and bringing its posterior part from the right shoulder, to which it inclined, towards the left, and of bringing the chin, which inclined towards the left shoulder, round to a front position. This operated very well, and much was gained towards bringing the head into a normal position; but the divided branch of the sterno-cleido-mastoideus united so quickly

as not to give time to correct the acute angle which its contraction had produced in the cervical vertabræ, and the cleidal portion of this muscle also became a barrier to the restoration of the head to a natural position. It was thought best, after a consultation, to divide this branch, and also to re-divide the sternal branch of the sterno-cleido mastoideus, which was done in the presence of Drs. J. M. Warren and E. W. Leach. The head did not turn suddenly round, as represented by some writers who have done the same operation, but it gradually came round, and as much as it could consistently with the previous contracted cervical and dorsal curvatures. When these curvatures are entirely corrected, there is no doubt the head will assume its normal position and be placed as it should be, in a mesial line between the shoulders. In fact, it is so much so now, that an acquaintance of the family, a lady, who called in, having heard that one of the children had a wry neck, asked which it was, all being present.

Fig. 23.



The application of the apparatus above described is represented in the cuts. A B, fig. 23, are the top springs, to which are at-

tached two straps. The one running from right to left, back of the head, is buttoned to a knob at the end of spring A, which runs backwards over the left shoulder. The other, running from left to right under the chin, is buttoned to a knob at the end of spring B, which runs forward over the right shoulder. Both acting together have a tendency to bring the head into an upright and central position. C, the crutches which run from the brass belt up under the arms. D, a strap running front of the body, which connects the two ends of the brass belt, and keeps it steady upon the hips.

Fig. 24.

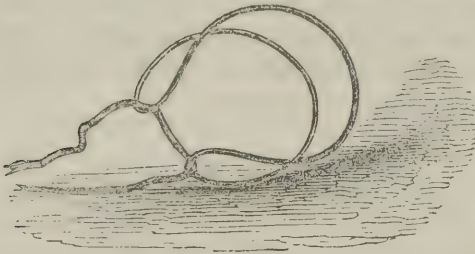


Fig. 24 represents a wire stock which was made use of when the apparatus above described was taken off. This may be folded in a neckerchief as a stiffener and tied in front, or the wire may be covered with velvet, and a ribbon passed through the two ends, and tied back of the neck, as is here done.

It is a mistaken idea to expect to restore the head to its normal position in torticollis by simply dividing muscles; still, the division of muscles is a necessary prerequisite step. There is always in wry neck of long standing a lateral curve of the spine, particularly of the cervical part of it. Subsequent treatment is necessary, and the same kind of means ought to be adopted, as made use of for correcting lateral curvature.

Jany. 1844.—B. H., a highly respectable merchant of Boston, placed his daughter under our care for wry neck and lateral curvature of the spine. The right hip the highest, and half an inch anterior to the left, giving a peculiar twist in the loins; head turned to the right and approximated to the left shoulder.

Divided the sternal branch of the sterno cleido mastoideus muscle on the left side of the neck. The case progressed favorably, and when she left the Institution the head was nearly restored to its correct position.

We have not seen the young lady for several years, but have recently been told by some of her most intimate friends, and by one in particular who has been for sometime an inmate of her father's house, that the only trace remaining of the deformity was a slight stiffness about the neck, and that her appearance and carriage were perfectly symmetrical.

April, 1846.—Miss C. placed under our care for wry neck and lateral curvature. The spinal curve was a consequence of the distortion in the neck. The head was inclined to the right shoulder, and the chin drawn towards the left. This patient had suffered from severe rheumatic fever some months previous, during which the cervical vertebræ had been particularly affected, and the neck was left in a permanently twisted and curved state.—There was in this case no contraction of the muscles, the disease having produced a thickened state of the intervebral substance, and an apparent enlargement of one or two of the vertebræ.

This patient is perfectly restored, and unless by very careful observation, not the least trace of her former difficulty can be discovered.

Other examples of this deformity, of equal importance and interest, we omit, as the similarity of the cases and the treatment would perhaps render them tedious to the general reader.

ANGULAR CURVATURE OF THE SPINE, OR HUMP-BACK, OFTEN
CALLED POTT'S DISEASE, CARIES, ETC.

This affection, consequent on caries of one or more vertebræ, is of very frequent occurrence; and our applications, from patients of this class, are proportionably numerous. It is, in truth, a fearful disease; but we have found it more amenable to treatment, and more frequently and permanently benefited, than a few years ago we could have ventured to promise ourselves, or than is generally supposed. By the rigid application of the rules of practice in these cases, inculcated by the French surgeons, the shocking deformity, which is so constantly the result of this disease, when neglected or injudiciously treated, may often be prevented, or rendered comparatively slight and unimportant.

We will give a brief extract, from the Case Book, of one or two instances of this affection, offering only those where sufficient time has elapsed to enable us to state, with certainty, the result.

Feb. 6, 1847. Mrs. M. placed her son, a lad 11 years of age, under treatment. He has severe angular curvature in the lumbar region. He is much bent forward, and has great feebleness in his legs. He walks stooping almost double, with one hand resting on each thigh. This is a method prompted by nature, for relieving the spine of the weight of the head and shoulders, which is borne by the arms, and thrown through them upon the lower limbs.

The lad is of a scrofulous appearance, has light hair, light eyes, fair complexion, &c. He first began to complain of his back about two years since. Two months ago he had an attack of fever, accompanied by excessive costiveness. The feebleness in the legs at this time amounted almost to complete paralysis.

Feb. 20. Find to-day that there is fluctuation in right lumbar region, about 3 inches from the spine. Directed constitutional treatment with iodine, wine of iron, and the external application of iodine, and applied spinal supporters.

March 30. The result of the application of the spinal supporters is most satisfactory. The boy walks with his body

straight, his head erect, and his whole appearance so altered, that he would not probably be recognized by one who had only seen him in his former bent condition.

June 10. The boy's general health is rapidly improving. He is evidently experiencing the benefits of the constitutional treatment.

March 1848. Young M. is doing well. He is constantly at play in the street with other boys. He continues to wear the apparatus a part of the time.

June 22, 1842. Mr. G. W. P. then of Derry, N. H., now of Manchester, N. H., brought his little daughter to the Institution, æt 4. She has, for a year past, at times suffered extreme pain in both ankles. Find, on examination, the lower part of the spine and upper part of the sacrum tender and swollen. Applied leeches, put on spinal supporters, and prescribed constitutional remedies. She was under our care, however at the Institution, only a small part of the time, for one year—at the end of this time, she seemed entirely cured. The spine was straight, the swelling and tenderness had left her back, and her health was perfectly restored. There seemed not a vestige of her old complaint left; still, in about two years from this time, she was brought to us with the startling information that there was a swelling and fluctuation of matter in the groin—in other words, a Psoas abscess, the usual termination of an angular curve of the spine, when it proves fatal. She was put under constitutional treatment again, and the next time we saw her, which was not for some months, this tumor in the groin had entirely subsided. The matter had been entirely absorbed, and her health not in the least impaired. She has continued well to the present time, now about 5 years.

Our theory of the case and its peculiarities is this: the caries, or ulceration of the vertebræ, was arrested by treatment, and in about a year or fifteen months, ankylosis, or a healthy union of the vertebræ, took place, and disease ceased. Still matter had been previously formed from the ulceration of the vertebræ, which

had not been absorbed. This slowly gravitated along the course of the Psoas muscle to the groin, and there formed the tumor above mentioned. This matter was afterwards absorbed, either as the result of constitutional remedies administered, or the spontaneous efforts of nature. The only deviation from perfect health and symmetry at this time is, that one leg is apparently—not really—a very little shorter than the other, so that the shoe on this foot requires a sole slightly thicker than the other, in order to make her stand even. This was occasioned by some irregularity in the ankylosis, which so formed as to give an obliquity to the pelvis, thereby necessarily causing an apparent shortening of one limb. This is the only circumstance which is left to tell the tale of her former, and at one time, alarming disease.

